



## The Bridge

### Soil Erosion Control Efforts Earn Fort Jackson National Award

By Miot Crews, Fort Jackson  
ITAM Coordinator

The Soil and Water Conservation Society (SWCS) presented Fort Jackson with its 1999 Merit Award for its successful erosion control program. "This is a national level award that we are proud of because it shows our commitment to sustaining our [Fort Jackson] training lands while improving the environment for future generations," said Fort Jackson's ITAM Coordinator.

The erosion control program at Fort Jackson began in 1991 with the initiation of an erosion control inventory, conducted by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS).

**THE BRIDGE IS THE  
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***BRIDGING THE  
GAP  
BETWEEN ARMY  
TRAINING &  
ENVIRONMENTAL  
STEWARDSHIP***

**MATERIALS AND OPINIONS  
APPEARING IN THIS  
NEWSLETTER ARE NOT  
NECESSARILY ENDORSED  
BY THE DEPARTMENT OF  
THE ARMY.**

The inventory identified training sites with excessive soil erosion or water quality problems on the installation's training lands. "Over the past eight years, between 120 and 150 sites have been identified for conservation," said Fort Jackson soil conservationist, Doyle Allen.

Crews said, "the Land Rehabilitation and Maintenance (LRAM) component of the ITAM Program at Fort Jackson is responsible for remediating 36 sites over the past eight years. And, even though the ITAM budget at Fort Jackson has been cut drastically over the years, we were still able to perform LRAM work with reduced funding."

In 1998, the United States Army Environmental Center (USAEC) provided services to Fort Jackson through the National Defense Center for Environmental Excellence (NDCEE), which is operated by Concurrent Technologies Corporation. Additionally, the Kansas State University National Institute for Land Management

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## Noise Data Helps Fort Carson Avoid Lawsuit

*By Dana Finney, CERL PAO*

**A**t Fort Carson, a \$3.3 million lawsuit was dropped when noise data collected in 1971 dispelled claims that training is now louder. The genesis of the lawsuit was a proposed housing development near Fort Carson, which financiers decided not to fund after assessing noise levels in the area. The developer sued on the basis of property devaluation, claiming that training noise had risen dramatically since the land was purchased.

Situated south of Colorado Springs and near Pueblo, Fort Carson's land holdings represent prime real estate. "The growth of communities in Colorado is phenomenal," said Nelson Kelm, noise program manager at Fort Carson. Increased noise levels at Fort Carson could have been ruled an environmental "taking" which amounts to a decline in property value.

Fort Carson discovered a 1971 letter commenting on a proposed development, which contained all the noise data taken in an El Paso City land use study. The U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) was able to reconstruct the noise contours from that year using models and tools developed by the U.S. Army Construction Engineering Research Laboratory (CERL).



**ARMOR TRAINING: —  
NOISY, BUT CRITICAL FOR REALISM.**

**A**ccording to Dr. Larry Pater, CERL noise researcher, "The methods for measuring noise have varied somewhat over the years, but CHHPM was still able to use what was documented to make a valid comparison between noise levels in 1971 and now." In fact, Kelm said the findings showed a reduction in noise since then and helped convince the developer to withdraw the lawsuit.

"Colorado has five of the fastest growing counties in the nation, and encroachment is a major issue." By "encroachment," Kelm means the increasing trend to site community developments closer and closer to military installations.

It is certain that urban growth will continue to explode and that as bases close and downsize that installations like Fort Carson will pick up units that increase training intensity. This can create land uses that are incompatible with the training noise. The resulting public annoyance and pressure to curtail or end noise-producing activities threaten realism in training.

"Land developers and zoning officials often have had little experience in dealing with noise," Kelm said. "It's critical for us to have the tools coming out of the Army's R&D program to provide valid information to our regional land use planners. They [planners] need the best possible noise data to make informed decisions about zoning so that proposed land uses are compatible. When we can't train at this installation any more, the Army will lose an important asset. Training is the only reason we exist".

## Fort Leonard Wood Hardens Its Approach to Land Management

*By Mike Buckley, Contributing Writer*

Standing on a trail that crosses through the trickling Smith Branch, Marv Meyer recalled how it never took more than a heavy rain and a few tank convoys to turn this and other stream crossings on Fort Leonard Wood into pools of impassable muck.

"The M-60 tank drivers training course would swing around here - about 12 or 13 tanks in a row - and after one or two training runs you had a quagmire," said Meyer, Chief of the Missouri installation's Natural Resources Branch. "We'd try to fill it in, but a few weeks later you'd have the same thing happen. The trainers couldn't use the road anymore."

The situation presented more safety, training, and environmental issues than Meyer's staff likes to remember. Moving tanks would dip precariously into wallows that sloped five or six feet deep. Installation staff had to close the trails for weeks to fix each crossing, altering the routes to some of the Army Engineer School's most valuable heavy-equipment training space. Even when the crossings were open, vehicles stirred up enough sediment to affect water quality miles downstream.

Three years ago, however, Fort Leonard Wood tackled these serious problems with a simple combination of concrete and engineering expertise. The post began fortifying its sensitive stream and wetland areas with hardened low-water crossings, reinforced concrete pads that are thick enough to support 60-ton vehicles without cracking, yet are low enough to allow streams to flow naturally over them. Post officials say the crossings have improved both training and environmental quality.

"The idea is to have a hardened surface on the same level that the water is flowing," said Joe Proffitt, a natural resources specialist at Leonard Wood. "You still get the realism of driving through water, but when a tire or tracked vehicle goes across, you don't make contact with the sediment and stir it up."

A look around one of these sites shows how much the staff has learned through experience. Chunks of smashed concrete, remnants of the installation's earlier attempts to address the problem, lay scattered around many of the new crossings.

"They used to put a culvert in and put some rock on top of it, but the tanks would just smash it flat," Proffitt said. "The materials alone would cost \$500 to \$1,000 each time, and they just didn't work. You'd be back every six or seven weeks with bigger rocks and culverts, and it was basically like putting a bandage on something that needed surgery."

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**In a photo taken before Fort Leonard Wood built its hardened stream crossings, a tank sinks into the Smith Branch.**

Photo by Mike Buckley and Jeff Lamb

## Fort Leonard Wood Hardens Its Approach

*(Continued from page 3)*

With money from the Army's ITAM Program, the fort built the foot-thick concrete slabs across several streambeds, giving trucks, bulldozers, graders, and other heavy vehicles sturdy passage-ways between training sites. Contractors installed 13 hardened crossings around Fort Leonard Wood, mostly across streams on the 1,700-acre Normandy Training Area. Each costs about \$6,000 and takes about two weeks to install. "None have needed maintenance," Proffitt said, "and major convoy routes have stayed open."

The post even refined an old idea, putting a reinforced culvert across a wider section of the Smith Branch. These and several other steps to control erosion over the last three years – conducted with the Natural Resources Conservation Service, among other partners – helped Fort Leonard Wood halve the amount of sediment flowing off the Normandy site.

With less mud and grit trapped in their vehicles, soldiers spend less time cleaning and more time training. That's especially important for National Guard and Army Reserve troops, whose time on Leonard Wood's outdoor engineering classrooms is limited. "They're not spending three days on the wash rack," Proffitt said. "They have

more time to spend [in the field] on their mission."

The low-water-crossing project typifies activities funded under ITAM's \$20 million LRAM program. It's like preventive care for training areas: spend a relatively low amount of money to address a problem now before it costs a lot more to repair -- and affects training and compliance -- in a few years. LRAM projects include road surfacing, fire, and flood protection, and erosion control measures like seeding and other soil stabilization techniques.

"If installations didn't develop and build projects such as stream crossings, Army training lands would be seriously degraded over time, and these areas would soon be unavailable for training," said P.J. Cisar, who leads the ITAM technical support team at the U.S. Army Environmental Center. "LRAM isn't necessarily about decreasing the Army's environmental violations – that's a side benefit. The primary focus is to make sure training areas are maintained to support the mission and don't degrade to the point where we start losing them."

The costs of these fixes may present additional challenges. ITAM funding runs out after 1999, and Proffitt said Fort Leonard Wood may have to alter plans to install three to five low-water crossings a year to cover all its major convoy routes. It wouldn't be the only adjustment, since LRAM projects have already enhanced conditions on Fort Leonard Wood's training areas and helped the post prepare to receive the Army's Chemical and Military Police schools – and thousands of additional trainees – from the closure of Fort McClellan, AL, this fall.

"We've worked with the environmental staff not only to prepare for the move of the schools but to accomplish many projects that keep our ranges in good shape and ready to use," said Andy Mastaho, Chief of Fort Leonard Wood's Range Division. "The stream crossings are another thing that will help us, in the long run."



**Four years later, a truck drives over a reinforced culvert on a wider section of the stream.**

Photo by Mike Buckley and Jeff Lamb



## SOFT LANDINGS

### Recycled Tires Yield Training, Environmental Gains at Fort Leonard Wood

*By Mike Buckley, Contributing Writer*

**R**un through a confidence course at "combat speed" and the next day, it feels like someone declared war on your body. Fort Leonard Wood has found a way to take some of the pain out of physical training – and help the environment at the same time.

The Missouri installation has replaced many of the sawdust "cushions" on its endurance courses and in its physical training (PT) sheds with shredded, recycled rubber tires. The switch, inspired by something a staff member saw on a local playground, is keeping tons of old tires out of landfills and many soldiers out of the hospital.

"We've only been using the material for a year, but lost-time accidents have almost disappeared," said Joe Proffitt, a natural resources specialist at Fort Leonard Wood.

Proffitt said the oak sawdust presented a number of environmental, health, and maintenance issues. During summer dry spells, soldiers kicked up dust that affected air quality and made it hard for them to breathe, especially in the covered training sheds. The sawdust compacted quickly after steady use, and despite constant "fluffing" with rakes and shovels, it felt like concrete to anyone who jumped or fell on it. It also would turn into compost after a few rainy periods, and needed constant replacement lest it rot its wooden containment pits and kill the surrounding grass.

In 1997, the post launched an ITAM project to identify alternatives to sawdust, as a training medium. Changing to the pea-sized tire pellets has allowed the installation to solve most of the sawdust-related problems. At about \$200 a ton the material costs more than sawdust, but Proffitt said it lasts much longer and it's practically maintenance free. It creates no dust, can be used in any weather, and moisture easily drains through it. Plus, the beds never need fluffing and their bouncy feel softens the shock of a jump or fall.

**T**he post's training and operations communities – especially the soldiers who run on the courses and train in the PT sheds—appreciate the switch.

"You don't get the basic stress on your body that comes from hitting the ground all the time," said Sergeant First Class Johnny Sapp, platoon sergeant of the Drill Sergeant School's 1st Platoon. "As a drill sergeant, you need to go beyond what the privates are going to do. [During hand-to-hand combat training] you need to hit the ground and demonstrate how to fall the right way, and you try not to make it look like it hurts, but it hurts. With this [pea-sized tire pellets] you can go full combat speed and you won't get hurt."

Indeed, the worn tires are helping to take the wear and tear off training troops, even during hand-to-hand combat exercises. "We had three lost-time accidents in the PT shed in 1997," Proffitt said. "We didn't have any after we started using the tires."

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**Pea-sized shreds of recycled tires replace the sawdust "cushions" on the endurance and PT sheds.**

Photo by Mike Buckley

## Soft Landings at Fort Leonard Wood

(Continued from page 5)

Soldiers also seem safer on the confidence and endurance courses, where serious accidents dropped from seven in 1997 to zero last year. Not long before the ITAM Program arranged for the tire beds on the confidence course, a trainee fell 30 feet from a climbing tower onto the sawdust, breaking her arm and shoulder. These days, thanks to the 24- to 36-inch layers of recycled rubber under the towers, hurdles, and other equipment, even potentially dangerous falls can turn out like a kid's routine spill from a jungle gym.

"It's making a difference," said Gary Chick, acting chief of Fort Leonard Wood's Safety Office. "If we can keep trainees on the full cycle without injuries, then people have done their job. We also have a lot of problems with tires in the environment, so this seems to be helping everybody."



**By using pea-sized shreds of recycled tires Fort Leonard Wood has prevented serious injuries on its physical training courses and kept tons of old rubber out of landfills.**

Photo by Mike Buckley

## Fort Jackson Erosion Control Merit Award

(Continued from page 1)

and Training and Aqua-Terr, LLC provided expert advice and support to the installation. Its [Fort Jackson's] objective was developing an optimum LRAM program and demonstrating the effectiveness of the program by executing selected projects.

Crews attributed the success of the erosion control program to the dedicated support by the military trainers and the Fort Jackson Command Group. He also credited the effective coordination between the Directorate of Plans, Training, and Mobilization (DPTM); Directorate of Logistics and Engineering (DLE); NRCS; and the people at TRADOC, who acquire funding and keep the ITAM Program alive.



**United States Army Training Center  
Fort Jackson, South Carolina**

## Camp Dodge Quiets Small Arms Noise with Mufflers

*By Dana Finney, CERL PAO*

Cut a piece of plastic culvert, add some sound-absorbing material inside, and you have a ready-made noise muffler for small arms fire. And while the resulting device may not appear very high-tech, sophisticated sound attenuation measurements show it can provide a low-cost way to greatly reduce noise levels in the local community.

The U.S. Army Construction Engineering Research Laboratory (CERL) developed the easy-to-make mufflers for testing at Camp Dodge, IA, home of the Iowa Army National Guard. A public meeting with the Johnston City Council had identified small arms firing at Camp Dodge as an annoyance to area residents. "We came to terms for curtailing our operations during certain parts of the day and night, and committed to longer term efforts to reduce the noise levels," said CW2 Howard Clegg with the Camp Dodge Environmental Office.

Public pressure that results in restricted training activities is a major concern to Army trainers. Readiness for today's soldiers demands a realistic training experience, and that includes noise. "The Army must train soldiers and leaders in the field and on firing ranges to understand the confusion from combat-like conditions such as smoke, noise, and the fog of battle," said COL (ret.) Ted Reid, who commanded a mechanized infantry brigade in the Gulf War. "Nothing in a simulated training environment can totally account for that."

While public tolerance to noise is declining, communities are moving closer to installations at a time when the Army's weapons are becoming larger and noisier. "We are in the middle of an economic boom where people are building expensive homes all around Camp Dodge," said CW2 Clegg. "The area around us has some of the best land space available—close to a recreation site that includes Sailorville Lake, which has great boating."

"We are concerned that, as the population grows, military installations will be less critical to local economies than in the past," said Dr. Larry Pater, CERL noise researcher. "Some of the fastest growing areas in the country are around training installations."

As a proactive means to address the small arms firing complaints, Camp Dodge asked CERL to design prototype mufflers. The camp operates its small arms ranges for pistol and rifle training year-round, with over 13,000 military and 6,000 civilians cycling through last year, including civilians from the Iowa Law Enforcement Academy. In all, nearly 1.3 million rounds were fired during the year.

The idea of using noise mufflers is not new, and various methods have been attempted over the years for large guns. A product developed in Europe for small arms appears to reduce noise effectively, but each muffler costs over \$2,000. Since every shooter needs a muffler station, CERL was looking for a design that would use low-cost materials and be easy enough to make with local labor using standard tools.

Of six designs proposed initially, two appeared most promising to meet the cost and assembly criteria. Both of these use 6-foot-long, 18-inch-diameter corrugated plastic tubing, which is lined with a noise-absorbing material held in place by steel mesh. The bore is large enough to afford the shooter an unrestricted view of the target. At Camp Dodge, materials cost less than \$100 per muffler, according to SFC Randy Boldt, Range Operations non-commissioned officer in charge. "We have nine mufflers in place now," Boldt said. "By taking this action, we're showing the community that we're trying to do something to reduce the noise."

To test the mufflers, a CERL team collected data at various locations on- and off-post. The guns fired were M-16s and M-60s, both single-

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## Fort Stewart Western Maneuver Area Program

*By Drew C. Brown, ITAM Coordinator & Thomas Houston, LRAM Coordinator*

**T**he Western Maneuver Area Program (WMA) at Fort Stewart is a joint effort that includes the 3ID (M) Command Group, Directorate of Training, ITAM, DPW Divisions, and maneuver elements. The shared mission of this group is to enhance the capability of, sustain, and reclaim the training lands in the Western Maneuver Area.

The Fort Stewart team's strategy is to integrate land management, conservation, and construction efforts for the purposes of integrating existing east to west maneuver lanes and providing maneuverability in four cardinal directions. Using 40 Km<sup>2</sup> blocks as areas of emphasis, the Fort Stewart team is planning projects for the maneuver area of Fort Stewart. In summary, the WMA objectives are to:

- Maximize timber removal and thinning to increase traffic mobility and Line of Site (LOS) distances for Miles, Tank Weapons Gunnery Scoring System (TWGSS), and Precision Gunnery Training Simulator (PGTS) engagements
- Establish and/or maintain wetland/water crossings to allow a North-South or East-West maneuver corridors across wetlands inside the maneuver blocks

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## Camp Dodge Quiets Small Arms Noise

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fire and fully automatic. Noise levels were recorded on special microphones placed in positions mapped using the physics of noise propagation. The metric of interest is called the "A-weighted sound exposure level (ASEL)," widely accepted by scientists as the best overall descriptor of human annoyance with noise. According to Pater, findings showed that ASEL noise levels with the mufflers dropped 10 to 20 decibels throughout much of the noise-sensitive region in the community. "This is a significant reduction in noise level, since just a 10 decibel reduction is perceived by humans as about half as loud."

Camp Dodge's Boldt noted that some operational features of the mufflers could be improved for users. While some trainees reported better ability to identify targets, other less favorable conditions emerged, such as smoke blowback and the need to readjust the muffler's positions for different shooting distances.



**Low-cost, locally built mufflers reduce rifle noise in the community around Camp Dodge by more than half.**

CERL is currently working with Camp Dodge to address these issues. Potential benefits from the mufflers greatly outweigh the cost to make them, even if design modifications would raise the cost somewhat, Pater said. Boldt agrees. "The bottom line is that if the mufflers help keep the range open, we need to use them."

Camp Dodge plans to have one small arms range fully equipped with noise mufflers by the end of the year.



## Fort Stewart WMAP

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- Prevent further damage to environmentally sensitive wetlands
- Establish Best Management Practices (BMPs) within the area to concurrently maximize training and meet the goals of the Integrated Natural Resources Management Plan (INRMP) and the Endangered Species Management Plan (ESMP).

The site of the first 40 Km<sup>2</sup> block is the area surrounding the Bethel Cemetery. Today, the area supports small task force maneuvers and includes five training areas. Two watersheds and coinciding wetlands bisect the Bethel area uplands. For 40 years, the pine uplands in the Bethel area have been under forestry management.

The site of the second 40 Km<sup>2</sup> block is an area located within the "hills" of Fort Stewart, where the elevation ranges from 28 to 64 meters. Today, the area supports small task force maneuvers. Intermittent streams and wetlands criss-cross sand hills of Pine and wiregrass communities. Like the Bethel uplands, this area has been under forestry management for over 40 years.

To accomplish the objectives associated with both blocks, the project team identified the following actions:

- Conduct an extensive Global Positioning System (GPS) / Geographic Information System (GIS) survey of the entire block to determine any prevalent attributes (e.g., Elevation, TES, Cultural, Wetlands, Existing Road Network, Forestry assets)
- Establish and analyze a Digital Elevation Model (DEM) to determine LOS and vertical profiles
- Identify selected areas to clear cut all merchantable timber
- Identify areas in which timber is to be thinned to 50 ft<sup>2</sup> of basal area per acre
- Identify areas for the construction of wetland crossings to increase traffic mobility
- Identify areas for possible land and/or soil conservation projects to minimize runoff and erosion.

The LCTA team conducted an extensive survey on the blocks by using the existing road network, 50 meter transects across wetlands, and the Trimble GPS. The team used Pathfinder Office ver 2.10 to update and/or correct the elevation data and used Arc-view 3-D analyst to develop the DEM. Then, the team used 3-D analyst LOS tools to analyze the data and determine LOS distances and vertical profiles with the goal of increasing the distances where terrain and environmental concerns allowed.

If LOS was 500 meters and environmental constraints allowed, then, the area was submitted for clear-cutting. If criteria were not met, then, the area in question was submitted for thinning. Wetlands were disallowed from clear-cutting for environmental reasons; therefore, the wetlands will be managed using BMPs contained within the INRMP and ESMP. In addition to the project team objectives listed above, all training areas within the blocks were submitted as candidates for annual burns to facilitate maneuver and LOS.

For the first 40 Km<sup>2</sup> block, the DEM analysis designated 671 acres to clear cut and 6,810 acres to thin to 50 DBA. In addition, five Low Water Crossing (LWC) sites were identified and sites for future conservation measures were analyzed. For the second 40 Km<sup>2</sup> block, the DEM was also analyzed. Based upon the analysis, 809 acres were designated to clear-cut and the remaining acreage was to be thinned to 50 DBA. Finally, as

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***The WMAP  
objectives and  
program execution represent  
Fort Stewart's commitment to  
environmental stewardship and  
the tenets of the ITAM  
Program.***

# 1999 ITAM Workshop

## Evolving and Growing Every Year

*By Gary Larsen, IISC Chairperson*

Congratulations to Camp Ripley, the Minnesota National Guard, and the National Guard Bureau for hosting an outstanding 1999 ITAM Workshop. General Vessey's keynote speech was widely recognized as the highlight of the week.

There were many successful innovations as part of this year's workshop. Many of the improvements were based on comments from the 1998 workshop. This year's workshop featured the first GIS breakout session. The GIS session turned out to be very successful with 165 participants and is again planned for next year. The block of papers that focused on ATTACC was also popular and highly attended. We all enjoyed interacting with our counterparts from other countries and will continue to encourage foreign participation.

As always, our goal is to involve more trainers and testers and improve integration among the various communities involved in supporting military readiness. To increase trainer and tester involvement, we are considering a breakout session focused on relevant training and testing topics and their relation to training land management. Based on comments from this year's workshop, we want to add a block of presentations specifically focused on training and range related issues to help increase our ability to integrate training requirements into everything we do.

A majority of this year's comments indicated that August is still the best time of year to hold the workshop. The workshop timing is driven by a number of factors. For one, the field tour, a popular component of the workshop, is more effective when held during the growing season. Consequently, early season project start-up precludes scheduling the workshop during April, May, or June. September brings all kinds of conflicts associated with year-end funding issues. Therefore, the July to August timeframe is considered the best option.

In the words of one participant, "*Great facilities. Extremely well organized. Best workshop to date!! Jay and the entire Camp Ripley staff deserve a lot of credit and praise*".

The exact week that the workshop is held depends on availability of facilities that can accommodate 400 or more people. Until we can get installations to volunteer to host the workshop two to four years ahead of time, when facilities for 400 people are more available, the workshop will continue to occur during a week when facilities are available, which for the last couple of years has been the final week of August.

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**1999 ITAM Workshop Field Tour Site 4:  
Tactical Concealment Area**

## Fort Story: Where Training Lands Meet the Training Sea

*By Johnny Noles, Fort Eustis and Fort Story ITAM Program*

Fort Eustis is home of the Army's only active port where landing craft, logistics and support vessels, and tugboats are based. Fort Story, a sub-installation of Fort Eustis and home of the U.S. Army Transportation Corps, is the Army's only continental training land where the ocean, beaches, and maritime forests are prime training areas.

Situated in the lower Chesapeake Bay on the Virginia Capes, these training areas are highly valued by the Army, Navy, and Marine Corps for specialized Joint-Logistics-Over-The-Shore (JLOTS), amphibious warfare, and marine operations.

Fort Story's military training lands are regarded as sensitive environmental areas. The pristine isolated beaches, maritime forest, and forested wetlands provide habitats to numerous rare and protected species. Dolphins parade in the surf zone, terns and sandpipers forage the beaches, live oaks and sea oats dot the sand dunes, and

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**Fort Story Where Training Lands  
Meet the Sea**

## 1999 ITAM Workshop

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Every year the presentations, level of participation, and facilities associated with the annual ITAM Workshop improve, and this year was no exception. This year there were 410 participants -- sixty more than in 1998.

In the words of one participant, "Great facilities and extremely well organized. The best workshop to date!! Jay and the entire Camp Ripley staff deserve a lot of credit and praise." The IISC seconds that endorsement.



Camp Ripley "hosts" Marty Skoglund and Jay Brezinka finally get a chance to relax at the Thursday night social, which officially ended a successful workshop.

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## Fort Story: Where Training Lands Meet the Training Sea

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gray and red foxes slip quietly through the forests. Striped mud turtles lie quietly in the forested wetlands and big-eared bats strike terror in the heart of mosquitoes, during forest wetland nights.

Spring and summer seasons highlight the environmental showcase, but surprisingly, military training has little or no impact on the pristine beaches and sand dunes. Instead, mother nature in the form of strong winds and waves takes it tolls, threatens the Army's only oceanfront training area, and puts the Army's stewardship commitment to the test.

Waves claw at the shoreline and wind shears away the sand dunes from October to April. Fall hurricanes and storms and winter nor'easters increase erosion at Fort Story. The vegetated above-sea-level sand dunes are the principal line of defense against beach erosion and help protect the beaches, historical sites, and ecological habitats from significant storm related floods and surges.

To meet the stewardship challenges, Fort Story's LRAM practice is to employ the highly touted GEOTUBES to combat beach erosion by augmenting the function of the natural sand dunes as a storm flood surge barrier. GEOTUBES, first used by the DOD at Fort Story, consist of a porous geotextile material that is laid along the toe of the sand dune and filled with sand and water. When the water drains and the sand is encapsulated, the GEOTUBES resemble a giant series of sandbags. The GEOTUBES are then buried into the toe of the sand

dunes, backfilled with sand, and vegetated with American beach grass, which has an extensive root system that helps retain the sand cover against wind erosion.

Multiple hurricanes and nor'easters have tested the effectiveness of the GEOTUBES. Beach areas with GEOTUBES experience only minor beach and dune erosion. Whereas beach areas without GEOTUBES have suffered severe erosion. The key to the GEOTUBES is that they offer passive resistance to wave energy. When storm surges bring elevated water levels, GEOTUBES absorb and allow water to pass through, over, and under the porous geotextile material. Consequently, water returns to the ocean without the scouring action that erodes beach sand.

GEOTUBES are not meant to be permanent. Occasionally, they are ruptured by wave-tossed sharp floating objects. If this occurs, GEOTUBES lose their integrity and need to be refreshed. Compared to other beach erosion control measures, such as bulkheads and rock revetments, GEOTUBES offer the most cost-effective means available to preserve and protect Fort Story's most valuable training asset -- the beaches.



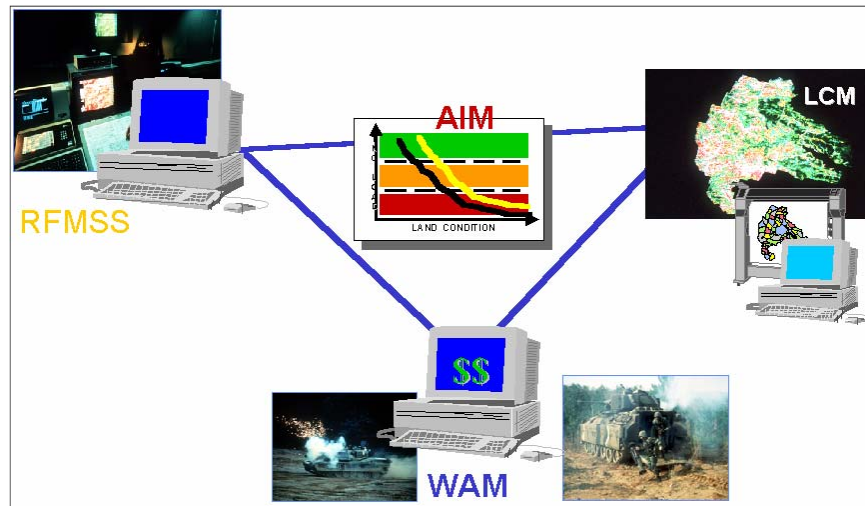
Without (left) and With (right) GEOTUBES.



# ATTACC Decision Support Tools & Working Groups

By Leslie Winters, USATSC

**A**TTACC, the standard ITAM methodology for estimating training land carrying capacity, now includes four decision support tools designed to simplify, automate, and integrate the ATTACC processes. The decision support tools include the Workplan Analysis Module (WAM), ATTACC Integration Module (AIM), Land Condition Module (LCM) and the ATTACC Functions of the Range Facility Management Support System (RFMSS). In addition to the decision support tools, two groups were established to focus on ATTACC-related issues: the ATTACC Working Group (AWG) (established to test and evaluate the decision support tools) and the Wind Erosion Advisory Group (WEAG) (established to evaluate current wind erosion models).



**What is the Workplan Analysis Module (WAM)?** The WAM is a computer-based software program that:

- Develops ITAM projects and costs
- Transmits the annual workplan and its projects
- Updates work projects throughout the fiscal year.

ITAM Program managers at the Installation, MACOM, and HQDA levels can use WAM to:

- Build and track ITAM projects from submission to completion
- Provide standard project and workplan reports
- Sort projects by fiscal year, installation, ITAM component, project priority and status.

WAM uses proven and supportable software, point-and-click technology, and reduces redundant data entry through use of drop-down boxes. The most current version of WAM will be fielded to the ITAM Coordinators in November 1999. For more information on the WAM, contact Mr. Larry Jantz of USATSC at (757) 878-3090.

**What is the ATTACC Integration Module (AIM)?** The AIM is a computer-based software program that:

- Integrates data from WAM, LCM, and RFMSS
- Generates LRAM requirements and dollars per maneuver impact mile (\$/MIM)
- Predicts land condition
- Calculates MIM thresholds for use in RFMSS.

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## ATTACC Decision Support Tools & Working Groups

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**I**nstallation-level ITAM managers are the primary users of AIM and can use it to:

- Analyze WAM project data to generate LRAM requirements
- Analyze “what-if” training scenario impacts
- Calculate MIMs for specific units and events
- Calculate MIM thresholds and \$/MIM per facility.

AIM provides the “missing link” that integrates the three components of ATTACC and uses proven and supportable software and point-and-click technology. AIM was distributed to the ATTACC Working Group (AWG) in August 1999 and will be updated based on AWG feedback and then distributed to all ITAM sites during the second quarter of fiscal year 2000. For more information, contact Ms. Leslie Winters of the USATSC at (757) 878-3090.

### **What is the Land Condition Module (LCM)?**

The LCM is an ArcView GIS-based software application that:

- Estimates changes in land condition associated with mission activity
- Automates the ATTACC methodology for generating land condition curves.

LCTA/GIS coordinators are the primary users of LCM. LCM uses installation natural resources data layers to generate land condition curves, which are an important input to AIM. LCM simplifies the process of generating land condition curves and uses proven and supportable software. Land condition curves can be developed for the installation, training areas, or any management area of interest. LCM has recently been distributed to the AWG, and will be ready for general release during the second quarter of fiscal year 2000. For more information, contact Mr. George Teachman of the USAEC at (410) 436-1593.

**What is the Range Facility Management Support System (RFMSS) and its associated ATTACC functions?** RFMSS is a computer system that automates range control operations. It supports the key range management functions of scheduling, fire desk operations, and ITAM/ATTACC. RFMSS ATTACC functions can:

- Calculate training load as events are scheduled
- Compare training load to Red-Amber-Green MIM threshold values (generated in AIM)
- Estimate land maintenance requirements using \$/MIM from AIM
- Provide ATTACC decision support through MIMs, the MIMs maps, and cost summary reports.

ATTACC capabilities exist in both RFMSS 3.5 and RFMSS XXI, and ATTACC is also being incorporated into the new converged RFMSS application — RFMSS-C. The AWG will test and evaluate RFMSS-C functions during first quarter of fiscal year 2000. For more information contact Ms. Leslie Winters of the USATSC at (757) 878-3090.

**What is the ATTACC Working Group (AWG)?** The AWG was formed in June 1999 to provide installation-level feedback on ATTACC initiatives. AWG and the near-term objectives include testing AIM, LCM and RFMSS-C. Members of the AWG include the following:

- Leslie Winters, USATSC
- George Teachman, USAEC
- Gordon Weith, USATSC
- Casey Colosky, CALIBRE Systems, Inc.
- Mike Brown, CALIBRE Systems, Inc.
- Buck Sykes, CALIBRE Systems, Inc.
- Alan Anderson, CERL
- Pam Sydelko, ANL
- Rusty Savoy, Fort Carson
- Tracy Rowles, Fort A.P. Hill
- Johnny Markham, Fort Benning
- Theresa Davo, Fort Benning
- Catherine H. Coleman, USMA
- Terry Schick, USARAK, FRA
- Nate Whelan, USARHAW

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# The ATTACC Wind Erosion Advisory Group (WEAG)

*By George Teachman, USAEC*

The WEAG was created to resolve issues regarding how to measure and predict erosion not caused by water and to implement, as part of the ATTACC methodology, a wind erosion model for accurately assessing current land conditions and predicting future land conditions.

Members of the WEAG include the following ITAM personnel, who were selected by their respective MACOMs, and ATTACC team members:

- Chris Cochran (Yuma Proving Ground)
- David Hall (Fort Bliss)
- Marj McHenry (Orchard Training Area)
- Ruth Sparks (Fort Irwin)
- Alan Anderson (CERL)
- Pam Sydelko (ANL)
- Leslie Winters (ATSC)
- George Teachman (AEC).

To date, WEAG accomplishments are numerous. The WEAG reviewed ATTACC implementation objectives and constraints, established model selection criteria, identified potential wind erosion models, evaluated potential wind erosion models as they relate to the model selection criteria, and developed a recommendation for a two-phased approach to address wind erosion in the ATTACC model.

## ATTACC Decision Support Tools and Working Groups

*(Continued from page 14)*

- Jay Brezinka, Camp Riley
- CPT Dan Smith, NGB
- MAJ Mike Tarpley, Camp Beauregard.

For more information, contact Ms. Leslie Winters of the USATSC at (757) 878-3090.

**What is the WEAG?** The WEAG is a work group that provides installation-level feedback on current erosion models and will recommend an additional erosion model to be used in ATTACC.

For more information contact Mr. George Teachman of the USAEC at (410) 436-1593.

The first phase and interim solution is to implement the Wind Erosion Equation (WEQ) into the ATTACC model. The rationale for this interim step is that the WEQ can be implemented with existing installation data, it provides estimates of wind erosion that are consistent with the rest of the ATTACC model, and it has already been successfully implemented at several military installations. In addition, although some additional modifications to the WEQ model are required for use with ATTACC (e.g., developing prediction capabilities that relate erosion to mission impacts), it is thought that modification can occur within the established time line.

To address the concerns that the WEAG has regarding the accuracy of the WEQ, when applied on military installations, the second phase is to continue investigating other more advanced wind erosion models, such as the Wind Erosion Prediction System (WEPS). The goal of this phase is to identify models that more accurately reflect conditions typically found at military installations and that account for typical military land use and land management activities. Currently, the WEQ is being modified for integration into the ATTACC model, incorporated into a GIS tool, and implemented using installation data examples. The WEAG is also continuing its ongoing investigations of other wind erosion models for potential use in phase two.



The Obvious Effects of Wind Erosion.

## Playing Cards Promote Environmental Awareness

*By Mike Cast, USAEC PAO*

**S**oldiers who use Army lands for training and other purposes can now get playing cards that remind them of their responsibility to protect those lands.

The Army's ITAM Program includes an environmental awareness component that educates land users on their environmental stewardship responsibilities. Materials developed under the ITAM Program relate the principles of sound land management and promote practices that reduce training and testing impacts. Soldiers get the word primarily through posters, videos, and field cards.

According to the creators of ITAM awareness materials, they are intended to provide information that addresses specific environmental sensitivities at an installation and reduce the potential for inflicting avoidable impacts to natural and cultural resources.

**T**ypically, informational materials target soldiers, other services using Army lands, installation staff and other land users.

As part of this awareness effort, the Army developed a deck of playing cards with messages on practices in the field that support "Readiness," "Stewardship," "Quality of Life", and the ability of the Army to "Preserve the Balance" between military and environmental needs. The Army distributed more than 75,000 decks of these cards to Army organizations in September 1999, mostly to units within the Army's Forces Command. The command is distributing the cards to soldiers in the field through the ITAM Program.

Anyone interested in purchasing decks of these cards can contact Lisa Booher of the U.S. Army Environmental Center at (410) 436-1591 or DSN 584-1591, or send e-mail to [Alicia.Booher@aec.apgea.army.mil](mailto:Alicia.Booher@aec.apgea.army.mil).



### The ITAM Bridge Winter 2000 Issue

NGB, USARPAC, MDW, and AMC/ATEC are responsible for the Winter 2000 issue. Articles should be provided to the MACOMs by 30 Jan. The target publication date is the 1<sup>st</sup> week of March.

Other MACOM-approved articles will also be accepted and should be submitted to USAEC by 30 Jan.



## Fort Bliss ITAM Mission Statement: Focuses Program Direction & Increases Program Value

*By Rick Gatewood, LRAM/LCTA Manager, Fort Bliss*

**I**nstallation level ITAM Programs should develop mission statements to support the installation and add value to their ITAM Program. Corporate America has developed and carried out mission statements to define the objectives, articulate sense of purpose, and relay key business drivers to the public. The mission statements impact the corporation's fiscal budget, activities, and tasks.

The Department of the Army (DA) ITAM Program's mission statement is "to ensure no net loss of training capability, to support current, and future training, and mission requirements". Although, this is a very good mission statement for the DA level ITAM Program, installations must consider scope of purpose so that they can develop and execute the mission at the installation level. To focus ITAM Program projects and assure the value of installation level ITAM Programs, installations should develop ITAM Program mission statements scoped to their specific training and/or testing mission.

The 1997 Fort Bliss ITAM mission statement is a product of a Directorate level sensing session specifically designed to identify the missions of the Fort Bliss Directorate of Plans, Training, Mobilization, and Security (DPTMS). The Directorate includes a varied cross-section of professionals, who during the sensing session surfaced many diverse ideas and concepts regarding the Directorate's key business drivers. The group also weighted and prioritized each concept, and then consolidated them into worthy mission statements for each division, as well as, an overall mission statement for the Directorate. The initial drafts were considered, and then reintroduced for comments, revision, and final approval.

The Fort Bliss ITAM mission statement gives emphasis to rehabilitation and conservation management practices. Fort Bliss uses a mission statement to determine purpose and direction for the ITAM Program.

**T**he mission statement guides the programmatic decisions on priorities and resource allocation. By focusing on the mission statement, Fort Bliss ITAM accomplishes land sustainment and rehabilitation projects of varying scope, all of which directly impacts the soldiers' ability to train.

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### THE FORT BLISS ITAM MISSION STATEMENT:

*SUSTAIN FORT BLISS  
TRAINING LANDS FOR  
CURRENT & FUTURE  
TRAINING  
REQUIREMENTS  
THROUGH LAND  
MANAGEMENT &  
REHABILITATION.*



**Figure 1: Aug 97, "Accident Site" Roving Sands Exercise After Action Report. Erosion of a Main Supply Route Range Road.**

## Fort Bliss ITAM Mission Statement: Focuses Program Direction & Increases Program Value

(Continued from page 17)

Like other ITAM installations, Fort Bliss battles erosion and its negative or potentially negative impacts on readiness. A 1997 CERL document defines accelerated erosion as, "occurring when natural erosion is exacerbated by human interaction with the land form, causing degradation, requiring mitigation".

LCTA data can indicate significant erosion trends, but the LCTA data are resource dependent and not always present where sheet, rill, and gully erosion occurs. Fortunately, most individuals without the aid of LCTA data can recognize erosion, however, they may not always know if the causes are natural or accelerated.

The Army's training management system uses a Mission Essential Task List (METL). The METL is a list of implied and explicit tasks that support the accomplishment of a given mission statement. The ITAM work plan, a comprehensive list of explicit tasks that ITAM may perform in support of the military mission, is similar to a METL. The component parts of ITAM (i.e., LCTA, GIS, LRAM, TRI, and EA) constitute the explicit tasks found in the work plan. Occasionally, the component parts may overshadow the central theme or mission, also known as mission creep.

Once an installation ITAM Program develops an ITAM mission statement, it becomes easier for the ITAM manager to decide which work plan tasks best support the mission. One example of this is the conduct of a biological study, which at first glance may appear to yield admirable results, but be of little relevancy to the military training mission. To support the training mission, we also need to analyze the findings of the biological study and use them to identify mitigation measures and provide the Commander with mission-related alternatives. Then, the study supports the military mission.

The mission statement guides the programmatic decisions on priorities and resource allocation. By focusing on the mission statement, Fort Bliss ITAM accomplishes land sustainment and rehabilitation projects of varying scope, all of which directly impacts the soldiers' ability to train.

Better yet, if the resources are available ITAM resolves the situation by performing the mitigation measures.



**Figure 2: Dec 97, ITAM supervises red cycle labor and post engineers to construct gabion weir at "accident site".**

## Fort Bliss ITAM Mission Statement

(Continued from page 18)

**E**rosion causing forces do not stop for funding considerations. Surface drainage problems such as runoff, erosion, and sediment control in active training areas and traveled roads seldom repair themselves. If an installation chooses not to mitigate erosion or if funding is unavailable, it may postpone an even greater mitigation cost. Inevitably there must be a higher level of rehabilitation funding to achieve the DA ITAM mission of ensuring, "no net loss of training capability".



**Figure 3: Jan 98, Hardened and rehabilitated site.**

**A**n Installation ITAM Program that relates ITAM projects to training or testing, via a mission statement, is one means to state the program's critical contribution. One way that Fort Bliss ITAM achieves the high payoff is by focusing installation-level ITAM Programs on the training mission. An ITAM mission statement helps focus the ITAM Program by scoping and accomplishing projects with a relevant and direct impact upon training. In addition, an ITAM mission statement explains the ITAM Program purpose to the installation in understandable military terms.

Because the Fort Bliss ITAM Program is focused on the military training mission requirements, Fort Bliss ITAM earns the cooperation, support, and resources of other organizations at our installation. Whenever ITAM Programs demonstrate that their projects have direct impact upon training, the Army leadership has assurance and evidence that ITAM is a program with high payoff and critical contributions.

## Fort Stewart WMAP

(Continued from page 9)

funds become available, 55 LWC sites were designated for construction.

After seeing the results of the analysis and the DEM, the command group and maneuver elements agreed that GPS/GIS and the DEM were also useful in the planning and After Action Review (AAR) phases of maneuver exercises. The use of GPS and DEM will be researched further for implementation as part of future training to be conducted on Fort Stewart.

As a result of the WMAP efforts, the maneuver space of Fort Stewart will be increased through the construction of LWCs, conservation projects, selective thinning of timber, selective clear-cutting of timber, and implementation of BMPs. This will allow maneuver and LOS engagements in the four

cardinal directions, which previously were limited by impassable terrain, sensitive ecosystems, and historic east west maneuver lanes.

By determining ways to increase utilization of Fort Stewart's finite land resources while maintaining the environment in a sustainable status, the WMAP objectives and program execution represent Fort Stewart's commitment to environmental stewardship and the tenets of the ITAM Program.

For ITAM information contact Drew Brown at 912-767-1478; e-mail

[browndc@emh5.stewart.army.mil](mailto:browndc@emh5.stewart.army.mil).

The LRAM POC is Thomas Houston at 912-767-0375; e-mail

[houstont@emh5.stewart.army.mil](mailto:houstont@emh5.stewart.army.mil).

<b>ITAM POC LIST</b> <b>EXECUTIVE MANAGEMENT COUNCIL (EMC)</b>			
ORG	NAME	EMAIL	PHONE, EMAIL, & FAX
HQDA	Tom Macia	maciaTE@hqda.army.mil	PHONE: (703)-614-4990 DSN: 224-4990 FAX: (703) 697-8356
ODEP	Chuck Wright	wrightc@hqda.army.mil	PHONE: (703)-693-0675 DSN: 223-0675 FAX: (703) 697-
USATSC	Larry Chenkin	chenkinl@atsc.army.mil	PHONE: (757) 878-3090 DSN: 927-3090 FAX: (757) 878-0934
USAEC	Paul J. Cisar	pjcisar@aec.apgea.army.mil	PHONE: (410) 436-1556 DSN: 784-1556 FAX: (410) 436-1680
MACOM REPRESENTATIVES			
ORG	NAME	EMAIL	PHONE, EMAIL, & FAX
AMC	Tom Vorac	voract@ria.army.mil	PHONE: (309) 782-4062 DSN: 793 FAX: (309) 782-8266
USAREUR	Tom Scarbath	scarbath@hq.7atc.army.mil	PHONE: 011-49-9641-83-6901 or 011-49-9641-83-6902 DSN: 475-6901 or 6902 FAX: 011-49-9641-8344 DSN FAX: 475-8344
FORSCOM	Ted Reid	reidt@forscom.army.mil	PHONE: (404) 464-7814 DSN: 367 FAX: (404) 464-6130
MEDCOM	Ed Miller	edward_miller@MEDCOM2. SMTPLINK.AMEDD.ARMY.MIL	PHONE: (210) 221-2902 DSN: 471 FAX: (210) 221-0042
USARPAC	Dudley McIver III	mciverd@shafter-emh3.army.mil	PHONE: (808) 438-6092 DSN: 315 FAX: (808) 438-6304
USARC	MAJ Gary Bullard	BullardGa@usarc-emh2.army.mil	PHONE: (404) 464-8285 DSN: 367 FAX: (404) 464-8313
EUSA	Larry Rogers	rogersl@usfk.korea.army.mil	PHONE: (011) 822-7913-4107 DSN: (315) 723-4107 FAX: (011) 822-7913-4142 DSN FAX: (315) 723-4142
MDW	Randolph Tompkins	tompkinsr@fmhc.army.mil	PHONE: (202) 685-2813 DSN: 325 FAX: (202 ) 484 -2852
ARNG	Joseph Norberg	norbergj@ngb-arng.ngb.army.mil	PHONE: (703) 607-9317 DSN: 327 FAX: (703) 607-7383
TRADOC	Tom Gray	grayj@atsc.army.mil	PHONE: (757) 878-3090 DSN: 927 FAX: (757) 878-0934
USMA	Catherine H. Coleman	ch-coleman@westpoint-emh2.army.mil	PHONE: (914) 938-5453 DSN: 688 FAX: (914) 938-2324



## **The Bridge**

US Army Environmental Center  
Building E-4435, Edgewood Area  
Aberdeen Proving Ground, MD  
21010-5401

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